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File: PGPB

Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020008330
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020008330 A1

TITLE: Methods and apparatus for recycling asphalt shingle material into composite board products

PUBLICATION-DATE: January 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Mischo, Donald J.	Janesville	WI	US	

APPL-NO: 09/ 837920 [PALM]
DATE FILED: April 18, 2001

RELATED-US-APPL-DATA:

Application is a non-provisional-of-provisional application 60/197867, filed April 18, 2000,

INT-CL: [07] B29 C 67/00

US-CL-PUBLISHED: 264/115; 264/118, 264/119, 264/120, 264/122

US-CL-CURRENT: 264/115; 264/118, 264/119, 264/120, 264/122

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

Used and manufacturing scrap asphalt shingle material is processed into a relatively course material comprising pieces or flakes of a maximum predetermined size, preferably with a relatively low aggregate content. The flakes are finish processed into a composite board product, with advantage taken of the larger size and low aggregate content. The board fabrication process includes (i) mixing the flakes with a relatively high percentage content of solvent suffused fiber, (ii) grinding and heating the flakes and fiber to form a homogenous semi-liquid mixture, (iii) extruding and conveying the homogenous mixture to a board forming station, and (iv) compressing the mixture into the composite board product. The flakes may be produced by an initial process that includes (i) shredding the used and scrap shingle material into pieces of a predetermined maximum size, and (ii) separating the shredded material into (a) fine material and (b) course material. In this instance, the course material comprises the larger flakes that are subsequently processed into the composite board product; and the fine material comprising the smaller sized pieces of shredded shingle material and loose aggregate dislodged from the larger sized pieces during the shredding process may be forwarded for finish processing into shaped products adapted to take advantage of the high aggregate content therein.

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application S/N 60/197,867, filed Apr. 18, 2000.

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L1: Entry 4 of 86

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Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020008330
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TITLE: Methods and apparatus for recycling asphalt shingle material into composite board products

PUBLICATION-DATE: January 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Mischo, Donald J.	Janesville	WI	US	

US-CL-CURRENT: 264/115; 264/118, 264/119, 264/120, 264/122

CLAIMS:

I claim:

1. A method for fabrication of a composite board from asphalt flake material, the method comprising the steps of: mixing asphalt flake material and a relatively high content of solvent saffuced structural fiber; grinding and heating the mixed asphalt flake material and solvent saffuced fiber to a conveyable consistency; and compressing the mixture into a board.
2. A method for fabrication of a composite board from asphalt flake material, the method comprising the steps of: providing asphalt flake material, solvent saffuced structural fiber, a substantially closed grinder having an inlet and an outlet, an extruder head connected to the outlet of said grinder, and opposing rollers downstream of the extruder head; feeding said asphalt flake material and a relatively high content of solvent saffuced structural fiber into the inlet of the grinder; grinding the asphalt flake material and solvent suffused fiber together to obtain a mixture (i) in which the flake material has been ground relatively fine and (ii) that is of a conveyable consistency; discharging the mixture through the extruder head and conveying the mixture therefrom to the rollers; compressing the extruded mixture into a sheet with the opposing rollers; cutting the compressed sheet into semi-finished panels of desired size; stacking the semi-finished panels; and finish compressing the stacked panels.
3. The method of claim 2 in which the volumetric ratio of the structural fiber is between approximately 25% and 50% of the total volume of the mixture.
4. Apparatus for recycling used/asphalt shingle material into a composite board comprising: a material staging station having an inlet to receive shingle material flakes and having an outlet; a processing station receiving the flake material and operative to mix and grind the flakes with solvent saffuced structural fiber; an extruder receiving the mixed and ground material and adapted to provided extruded ground material therefrom; one of a pair of opposing compression rollers and a press for compressing the extruded material; and a cutter positioned to cut the compressed material into composite boards.

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PGPUB-DOCUMENT-NUMBER: 20020008330
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NAME	CITY	STATE	COUNTRY	RULE-47
Mischo, Donald J.	Janesville	WI	US	

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DATE FILED: April 18, 2001

RELATED-US-APPL-DATA:

Application is a non-provisional-of-provisional application 60/197867, filed April 18, 2000,

INT-CL: [07] B29 C 67/00

US-CL-PUBLISHED: 264/115; 264/118, 264/119, 264/120, 264/122

US-CL-CURRENT: 264/115; 264/118, 264/119, 264/120, 264/122

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

Used and manufacturing scrap asphalt shingle material is processed into a relatively course material comprising pieces or flakes of a maximum predetermined size, preferably with a relatively low aggregate content. The flakes are finish processed into a composite board product, with advantage taken of the larger size and low aggregate content. The board fabrication process includes (i) mixing the flakes with a relatively high percentage content of solvent suffused fiber, (ii) grinding and heating the flakes and fiber to form a homogenous semi-liquid mixture, (iii) extruding and conveying the homogenous mixture to a board forming station, and (iv) compressing the mixture into the composite board product. The flakes may be produced by an initial process that includes (i) shredding the used and scrap shingle material into pieces of a predetermined maximum size, and (ii) separating the shredded material into (a) fine material and (b) course material. In this instance, the course material comprises the larger flakes that are subsequently processed into the composite board product; and the fine material comprising the smaller sized pieces of shredded shingle material and loose aggregate dislodged from the larger sized pieces during the shredding process may be forwarded for finish processing into shaped products adapted to take advantage of the high aggregate content therein.

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application S/N 60/197,867, filed Apr. 18, 2000.

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L1: Entry 5 of 86

File: PGPB

Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020007766
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020007766 A1

TITLE: Methods and apparatus for recycling asphalt shingle material into landscaping, ground cover and erosion control products

PUBLICATION-DATE: January 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Mischo, Donald J.	Janesville	WI	US	

US-CL-CURRENT: 106/133.1

CLAIMS:

I claim:

1. A method for processing used and manufacturing scrap asphalt shingle material into ground cover product, the method comprising the steps of: shredding said asphalt shingle material into asphalt material flakes; mixing a surface treatment material with the asphalt material flakes; and heating the mixture comprising the surface treatment material and the asphalt material flakes to a temperature sufficient for the surface treatment material to embed into the surface of the flakes.
2. The method of claim 1 further comprising the steps of: in said mixing step, mixing a surfactant with the surface treatment material and the asphalt material flakes; and drying the surface treated flakes.
3. The method of claim 2 in which said surfactant includes a liquid solvent.
4. The method of claim 1 further comprising the steps of: laying the surface treated flakes in a substantially flat position; and compressing the surface treated flakes to form a mat.
5. A method for processing used and manufacturing scrap asphalt shingle material into ground cover product, the method comprising the steps of: providing: a mixing chamber having an inlet and an outlet; means for introducing the asphalt flakes into the inlet of the mixing chamber; surface treatment material; and at least one of: means for introducing dry surface treatment material into the inlet of said mixing chamber, and means for introducing liquid-borne surface treatment material into said mixing chamber; introducing the asphalt flakes into the inlet of the mixing chamber; introducing one of the dry and the liquid-borne surface treatment material into the mixing chamber; mixing the asphalt flakes and the surface treatment material in the mixing chamber; heating the mixture in the mixing chamber to a temperature sufficient for the surface treatment material to embed into the surface of the asphalt flakes; and discharging the surface treated flakes from the mixing chamber.
6. The method of claim 5 further comprising the steps of: providing both of said means for introducing surface treatment material into the mixing chamber; and introducing the other of the dry and the liquid-borne surface treatment material into the mixing chamber.
7. The method of claim 5 further comprising the steps of: laying the surface treated flakes in a substantially flat position; and forming a mat by compressing the surface

treated flakes together.

8. The method of claim 7 further comprising the steps of: providing a backing material; and attaching the backing material with the compressed flakes.

9. The method of claim 5 further comprising the steps of: in said mixing step, mixing a surfactant with the surface treatment material and the asphalt material flakes; and drying the surface treated flakes.

10. The method of claim 5 in which said mixing chamber comprises a mixing tube provided with auger flighting for carrying the material therethrough.

11. Apparatus for recycling used/asphalt shingle material into a composite board comprising: a material staging station having an inlet to receive shingle material flakes and having an outlet; a processing station receiving the flake material and operative to mix and grind the flakes with solvent saffuced structural fiber; an extruder receiving the mixed and ground material and adapted to provide extruded ground material therefrom; one of a pair of opposing compression rollers and a press for compressing the extruded material; and a cutter positioned to cut the compressed material into composite boards.

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L1: Entry 5 of 86

File: PGPB

Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020007766
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020007766 A1

TITLE: Methods and apparatus for recycling asphalt shingle material into landscaping, ground cover and erosion control products

PUBLICATION-DATE: January 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Mischo, Donald J.	Janesville	WI	US	

APPL-NO: 09/ 838034 [PALM]
DATE FILED: April 18, 2001

RELATED-US-APPL-DATA:

Application is a non-provisional-of-provisional application 60/197995, filed April 18, 2000,

INT-CL: [07] C08 L 3/00

US-CL-PUBLISHED: 106/133.1

US-CL-CURRENT: 106/133.1

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

Used and manufacturing scrap asphalt shingle material is processed into a relatively course material comprising pieces or flakes of a maximum predetermined size, preferably with a relatively low aggregate content. The flakes are finish processed into ground cover and/or erosion control products, with advantage taken of the larger size and low aggregate content. Processing of the flakes include (i) tumbling and simultaneously heating the flakes and a dry powder, (ii) embedding a surface treatment material into the heated flakes, and either (iii) drying the flakes for use as loose ground cover, or (iv) compressing the flakes into a mat product. The flakes may be produced by an initial process that includes (i) shredding the used and scrap shingle material into pieces of a predetermined maximum size, and (ii) separating the shredded material into (a) fine material and (b) course material. In this instance, the course material comprises the larger flakes that are subsequently processed into the ground cover and erosion control products; and the fine material comprising the smaller sized pieces of shredded shingle material and loose aggregate dislodged from the larger sized pieces during the shredding process may be forwarded for finish processing into shaped products adapted to take advantage of the high aggregate content therein.

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 60/197,995, filed Apr. 18, 2000.

[0002] Reference to microfiche appendix (specifying the total number of microfiche and total number of frames) for computer programs:--None.